

Learning is not passive; it is not something that is done to you nor does it occur by simply sitting and listening to another speak. Instead, learning is a process that must be actively engaged in by the student. Therefore, I see the role of the teacher as a facilitator of the learning process. As a facilitator the teacher can help explain complex topics, help students build on and redefine their prior knowledge, and help students organize the material in such a way that allows for deep processing. However, even with the best analogies or detailed explanations, if the student is not involved in constructing the knowledge on their own, then true learning will not occur. Therefore, most importantly, the facilitator will provide opportunities for students to construct their own knowledge. This idea defines my approach to teaching and therefore every semester I am constantly re-evaluating my teaching materials and trying to find ways in which to engage students during class, or design assignments that guide students through an inquiry-driven process that allows them to make their own connections and have their own "aha" moments.

I have always been told that I was good at explaining complex topics, so when I first started teaching I focused the majority of my efforts on coming up with detailed and clear explanations of the topic at hand. I naively thought that as long as the students understood the material that they could then easily learn it in a manner that would allow them to not only remember but also apply that material. I quickly became aware of the limitations of this approach. Students would sit through a lecture, and it would "all make perfect sense", but when it came to exam time I found that the students were not able to apply that knowledge to solve problems or answer exam questions. I realized that I was not giving my students enough opportunity to practice nor was I allowing them the opportunity to construct their own knowledge. Since then, I have made strong efforts to re-design my curriculum in a manner that incorporates more active learning opportunities.

For example, in BMB401 (General Biochemistry I), I wrote a series of clicker questions and homework worksheets, and recruited undergraduate learning assistants to help facilitate collaborative learning opportunities focused around these in-class clicker questions and homework worksheets. In BMB464 (Molecular Medicine) I wrote a series of case studies, which include a pre-analysis assignment, 1 or 2 primary research articles, a set of guided inquiry questions, a group presentation, and a post-analysis. I now use 8 different case studies over the course of the semester, and the students use both an individual approach (to complete pre- and post-analysis) and a collaborative learning approach (to discuss the guided inquiry questions during a class period and present the paper on their group's chosen date) to complete these case studies. I found that students really excelled in this environment and many of them have impressed me not only with their increased confidence in reading and analyzing primary literature but also with the strides that they made in improving their analytical skills over the course of the semester.

Lastly, I think another important role of the teacher is to motivate students to learn, to encourage them to reach their full potential, and to nurture their own inquisitive nature. I truly love science and the nature of discovery, and I find it to be extremely rewarding when students find this same passion for their studies. I try to lead by example, and I am not afraid to let students see me get excited about a biochemical process, or a research study that uncovered novel theories. I also try and make sure that students understand that I expect them to take responsibility for their own learning, but I am always willing to help them if they put in the initial effort. In as much, I have extensive office hours to make sure that when students want help deconstructing a topic or making connections between pieces of material that I can facilitate this process. I have also found that one of the best ways that I can encourage students in their quest for knowledge is to "let my inner nerd glow" and I hope that the passion and excitement for science will spread quicker than a protein folds or ions move through ion channels.